

CLAIMS

1 **1.** A semiconductor layer, characterized by
2 comprising:
3 a first layer made of a Ga_2O_3 system semiconductor;
4 and
5 a second layer obtained by replacing a part or all of
6 oxygen atoms of the first layer with nitrogen atoms.

1 **2.** A semiconductor layer according to claim 1,
2 characterized in that:
3 the second layer is made of a GaN system compound
4 semiconductor.

1 **3.** A semiconductor layer according to claim 1,
2 characterized in that:
3 the first layer is a Ga_2O_3 system single crystal
4 substrate.

1 **4.** A semiconductor layer according to claim 1,
2 characterized in that:
3 the first layer is made of Ga_2O_3 , $(\text{In}_x\text{Ga}_{1-x})_2\text{O}_3$ where 0
4 $\leq x < 1$, $(\text{Al}_x\text{Ga}_{1-x})_2\text{O}_3$ where $0 \leq x < 1$, $(\text{In}_x\text{Al}_y\text{Ga}_{1-x-y})_2\text{O}_3$ where
5 $0 \leq x < 1$, $0 \leq y < 1$, and $0 \leq x + y < 1$, or the like, as a

6 main constituent.

1 5. A semiconductor layer according to claim 2,
2 characterized in that:

3 the second layer is made of GaN, $\text{In}_z\text{Ga}_{1-z}\text{N}$ where $0 \leq z$
4 < 1 , $\text{Al}_z\text{Ga}_{1-z}\text{N}$ where $0 \leq z < 1$, $\text{In}_z\text{Al}_p\text{Ga}_{1-z-p}\text{N}$ where $0 \leq z < 1$,
5 $0 \leq p < 1$, and $0 \leq z + p < 1$, or the like, as a main
6 constituent.

1 6. A semiconductor layer, characterized by
2 comprising:

3 a first layer made of a Ga_2O_3 system semiconductor;
4 a second layer made of a GaN system compound
5 semiconductor and obtained by replacing a part or all of
6 oxygen atoms of the first layer with nitrogen atoms; and
7 a third layer made of an GaN system epitaxial layer
8 and formed on the second layer.

1 7. A semiconductor layer, characterized by
2 comprising:

3 a first layer made of a Ga_2O_3 system semiconductor;
4 and
5 a second layer made of a GaN system compound
6 semiconductor and formed on the first layer.

1 **8.** A semiconductor layer, characterized by
2 comprising:
3 a first layer made of a Ga_2O_3 system semiconductor;
4 a second layer made of a GaN system compound
5 semiconductor and formed on the first layer; and
6 a third layer made of an GaN system epitaxial layer
7 and formed on the second layer.